

Influence of inhibitors of cytoskeleton proteins on water exchange of wheat roots under the after-action of water stress

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Abstract

The dynamics of water molecular state and transport in winter wheat (*Triticum aestivum* L.) of roots different resistance cultivars was studied by a biophysical method, Nuclear Magnetic Resonance (NMR), and a physiological method, Water-Holding Capacity (WHC). The effective coefficient of water self-diffusion ($D(\text{eff})$), spin-spin relaxation times (T_2) and WHC were measured after structural modification of cytoskeleton by colchicine and cytochalasin B after the action of water stress. New information about molecular mechanisms of water state and water transport regulation determined by the influence of dynamic cytoskeleton structure has been obtained. This is very important for the development of a fundamental theory of water exchange in plants, and for the ways of its optimization under conditions of environmental stress. (C) 2000 Academic Press.

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Keywords

Cytoskeleton, Membrane, Microfilaments, Microtubules, NMR, Permeability, *Triticum*, Water